Coyotes, Deer, and Trappers

By Gerry Lavigne

Many trappers target coyotes simply for the challenge of outwitting a remarkably cagey critter. But how many fall trappers take coyote as part of a coyote control program? Probably not many, but I encourage more to do so.

In the Northeastern U.S. and adjacent Maritime Provinces of Canada, deer populations have been dwindling for decades under the dual stresses of wintering habitat degradation and excessive predation, particularly by eastern coyotes. Deer hunters have been clamoring for state fish and wildlife agencies to address the deer problem, as deer harvests and hunting opportunity plummet. While state agencies are quick to regulate doe harvests, and are working towards long-term approaches toward improving deer yarding habitat, they are very reluctant to implement any type of predator control program. Clearly, to the extent that coyotes can be controlled, it will have to be accomplished by individuals and private organization, not by government. Can fall trapping play a positive role in controlling eastern coyotes?

First, a bit about the major players, and the environment they inhabit. Our deer problem area is the northern fringe of the whitetail's range in the east. The landscape is heavily forested, with mixtures of spruce-fir and northern hardwoods. Less than 10% of the landscape is open farmland. Land ownership is heavy toward industrial timberland, although there is a trend toward smaller, private ownership.

Timber harvesting is the primary land use, and a lot of timber has been cut during the past 40 years, often to the detriment of wintering deer. Heavy timber harvesting in deer yards removes the softwood canopy, leading to increased snow depths, and this makes it easier for coyotes to kill deer. Winter comes early and stays a long time in this part of the deer's range. Deer move into wintering habitat (yards) when snow gets to their knees (about 12

inches), and they stay on winter range until spring thaws reduce the snowpack to below their knees. Northeastern deer commonly yard up in late November, and stay on winter range until mid-April or even early May. Snow typically accumulates to depths exceeding 2 feet by late December, and may reach 3 feet for weeks on end. During the winter of 2007, snow depths in northern Maine reached 7 feet during March.

Snow is a major barrier for deer mobility. A foot of snow causes them to move to wintering range; 18 inches pushes them into the better stands of softwood; 2 feet restricts deer to their snow trails; and 3 feet restricts them to only the best trails in their core wintering habitat. Deer losses to coyotes in this region are directly related to snow conditions. Whenever snow depths exceed 18 inches, coyotes easily kill deer. In 2 feet of snow, coyotes kill non-selectively, i.e. not just the old, sick, and weak as commonly believed. At 3 feet and above, coyotes may engage in surplus killing, which involves killing far more than they can consume simply because they can. In the spruce-fir forests of the northeast, deer losses can exceed 30% of the deer population during severe winters, and severe winters are the norm 8 years out of 10. Losses to coyote typically exceed starvation losses.

As if high winter losses were not enough to deplete deer populations, excessive spring fawn losses to predation compound the problem. On the northeastern fringe of the whitetail's range, both coyote and black bear target newborn fawns during June and July. Most studies show that coyote and bears are about equally responsible for early fawn losses, and together with all the other causes of fawn mortality, fawn crops can be diminished by 50% to 60% by October. High fawn mortality reduces the number of young deer recruited into the population to replace those older deer lost during the past year. Poor recruitment can prevent a deer herd from increasing, and when combined with high adult mortality, can cause a herd to plummet to very low levels.

This is what has been ongoing over vast areas of the Northeast during the past few decades. Currently, deer populations average less than 5 deer per sq. mile, with many local herds below 1 deer per sq. mile. In their heyday, prior to the arrival of the eastern coyote in the

1960s, deer thrived at 20 or more per sq. mile, despite severe winters.

Enter the eastern coyote. The extirpation of gray wolves by 1900 in the Northeastern U.S. and Maritime Canada left a vacuum that was filled by what we now call the eastern coyote. Western coyotes are believed to have migrated eastward around the Great Lakes, and along the way interbred with gray wolves. The resulting critter was larger and more capable of killing deer, while also showing some wolf-like behavior. Eastern coyotes average about 35 lbs., with mature males exceeding 40 lbs. or more. They exhibit stronger tendency to form and maintain packs, typically consisting of a mated pair and their current year's pups. While some young disperse in the fall, eastern coyotes often delay dispersal until later, resulting in larger pack size during winter.

Eastern coyotes may also show delayed reproductive activity among young of the year and yearling females, unlike their western kin. Consequently, eastern coyotes cannot support the high mortality (touted to be 70%) that western coyotes can withstand, without declining in abundance.

Snowshoe hares, whitetail deer, and moose carrion form the bulk of the annual diet among eastern coyotes that inhabit the northern fringe of eastern deer range. Except during fawning season, coyotes prey predominately on snowshoe hares on bare ground, or at low snow depths. However, the same snow depths that hinder deer also make it increasingly difficult for coyotes to kill hares. As a result, coyotes become "obligate" deer predators in deep soft snow. This means they have no choice; it's biologically essential to their survival.

At such times, most coyotes seek out wintering concentrations of deer within their home range. Although not yet proven, it is probable that several coyote packs may partition large (1,000 to 10,000 acres) deer wintering areas when hares are not available.

Eastern coyotes breed during February and whelp in April. Litter size and pregnancy rates are highest among adult bitches (2 yrs and older). Reproductive rates among yearlings are only slightly lower than for adults. Among young (10 months old) coyote bitches, pregnancy rate is

highly variable. As growing youngsters, these coyotes will reach breeding condition only after they have attained a certain body size. In the northern fringe of deer range in the East, young coyotes may not be able to acquire enough food to reach breeding condition, given the stresses of deepening snows from December to early February. Food availability for those 2 months prior to breeding may also limit changes in litter size among eastern coyotes.

In more temperate areas, a reduction in coyote numbers may leave more food available for the survivors, leading to improved nutrition, and higher reproduction. But here in snow country, a reduction in coyote density prior to breeding may reduce the ability of survivors to acquire food, and this may dampen the boost in reproductive rate.

Studies in the north country show that deer killing ability among eastern coyotes is directly related to pack size. Solitary coyotes have the greatest difficulty in killing deer, while packs of 3 or more are quite efficient. Control efforts that reduce coyote pack size during late fall and early winter will likely save deer.

Given the lower contribution of young eastern coyotes to overall reproductive potential, north country coyotes can withstand only 50% to 60% annual mortality before their abundance declines. Coyote populations that receive little mortality from man probably still lose 45% of their numbers each year, primarily to natural causes and accidents. A good chunk of that mortality (about 30%) occurs between April and October, primarily among young coyotes. Therefore, about half of the maximum sustainable coyote mortality occurs *before* trapping season begins. Which begs the question, how much additional mortality can trapping whittle away toward that maximum of 60% annual losses?

In Maine, trappers can take coyotes from mid-October to late December—a good time of the year, being just prior to deer yarding time. Coyote harvests in Maine total about 1,800 to 2,000 most years. This amounts to roughly 10% to 12% of that state’s peak annual coyote population. Not a bad start toward achieving population control! By the end of trapping season, at least 40% of the coyote population has already bitten the dust. This is a bit of an underestimate, since many hunters kill coyotes while hunting other game in the fall, and these coyote are rarely tagged as fur.

Trappers are the first line of offence in achieving coyote control in the north country, and their efforts should be recognized and appreciated by deer hunters across the region. Trappers shouldn't be concerned if their catch is predominately young coyotes. After all, pups and yearling coyotes typically comprise more than 2/3rds of fall eastern coyote populations. Besides, *any* coyote catch reduces average pack size, which reduces their deer killing efficiency. For those trappers who want to achieve the greatest local benefit for wintering deer, concentrate your traps to maximize multiple catches. And if you catch the dominant male or female, you stand a good chance of knocking the local coyote population down for a year or so.

To reduce their deer killing efficiency, we need some way to reduce pack size and overall coyote abundance by another 20% prior to February. This would mean trappers increasing their take by another 4,000 coyotes in Maine, an unlikely event, or finding some other group to take that many coyotes between October and late January.

All across the region, a grassroots movement is emerging to take up the coyote control challenge. Concerned deer hunters in Maine, New Hampshire, Vermont, New York, and the Maritimes are forming private control associations aimed at hunting coyotes using bait, calling, and dogs. The effort is in its infancy, with many organizations being in existence only 5 year or less. In addition, an increasing number of guides now offer coyote hunts during winter. Many more individual hunters are catching on to coyote hunting as an exciting sport.

To be successful, these control efforts must cover vast areas, and coyotes must be killed early to reduce coyote density and pack size each winter. There is much to be learned about efficiently finding, killing, and controlling coyotes in the eastern part of its range. However, it's fairly certain that an integrated approach that combines fall trapping with targeted hunting during fall and early winter has the greatest potential to reverse our declining deer resource. Time will tell whether we can consistently reduce early winter coyote populations here. Personally, I'm optimistic!

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